

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 62082
CR No. 3 (LAKE STREET)
OVER THE
MISSISSIPPI RIVER
DISTRICT 5– HENNEPIN COUNTY



PREPARED FOR THE
MINNESOTA DEPARTMENT OF TRANSPORTATION
BY
COLLINS ENGINEERS, INC.
JOB NO. 5221

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure unit inspected at Bridge No. 62082, Pier 5, was found to be in overall good condition with no defects of structural significance observed. In general, the concrete of the pier was good and sound with only some random minor hairline cracking. A scour depression with footing exposure was observed for the full vertical height (per plans) of the footing.

INSPECTION FINDINGS:

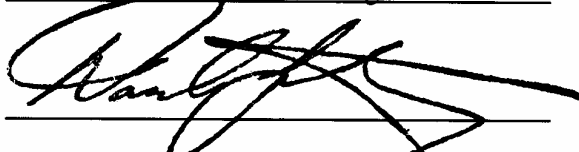
- (A) Scour depression with footing exposure was observed at the upstream nose of Pier 5 and extended for 3/4 of the pier length along both sides of the pier. At the upstream nose, the full 6 feet of the vertical face of the footing was exposed, but no undermining or seal exposure (just top partially exposed) was encountered.

RECOMMENDATIONS:

- (A) Monitor the exposure of the footing and partial exposure of the seal at the upstream nose of Pier 5, and if found to be progressing, additional measures may then be warranted.
- (B) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

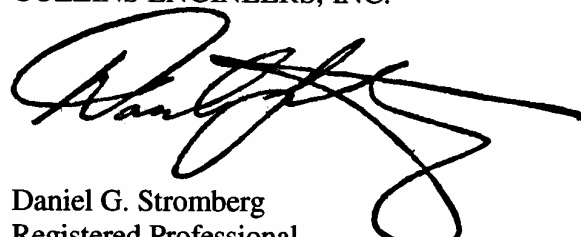
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Daniel G. Stromberg


Date 6/30/2008 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.


Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 62082

Feature Crossed: Mississippi River

Feature Carried: CR 3 (Lake Street)

Location: District 5 – Hennepin County

Bridge Description: The bridge superstructure consists of a multi-span reinforced concrete arch. The superstructure is supported by two reinforced concrete abutments and eight reinforced concrete piers. The pier that is located in the center of the waterway (Pier 5) is supported on caissons.

2. INSPECTION DATA

Professional Engineer/Team Leader: Daniel G. Stromberg, P.E., S.E.

Dive Team: Clayton G. Brookins, Valerie Roustan

Date: October 18, 2007

Weather Conditions: Partly Cloudy, 60°F

Underwater Visibility: 2.0 feet

Waterway Velocity: 1.5 f.p.s.

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Pier 5

General Shape: Pier 5 is rectangular with pointed noses. The base of Pier 5 (rectangular footing and seal combination) is supported on twelve 7-foot-diameter caissons.

Maximum Water Depth at Substructure Inspected: Approximately 13.4 feet.

4. WATERLINE DATUM

Water Level Reference: The benchmark reference located on Pier 5.

Water Surface: The waterline was approximately 9.5 feet below reference.
Waterline Elevation = 725.5.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

Item 61: Channel and Channel Protection: Code 6

Item 92B: Underwater Inspection: Code B/10/07

Item 113: Scour Critical Bridges: Code N/02

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

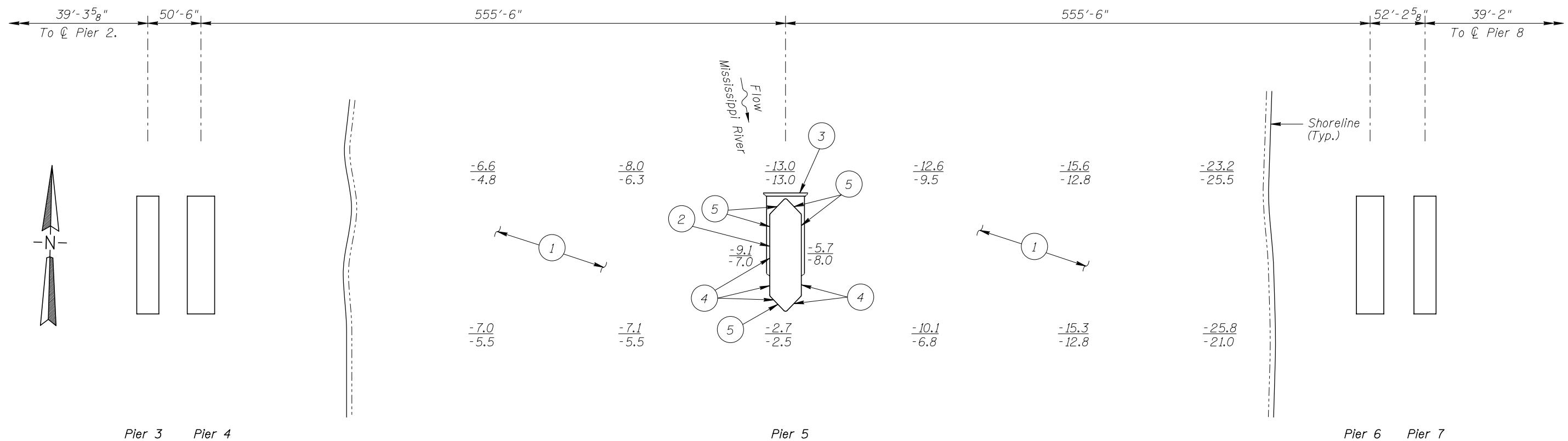
 Yes X No



Photograph 1. Overall View of Structure, Looking Southeast.



Photograph 2. View of Pier 5, Looking East.



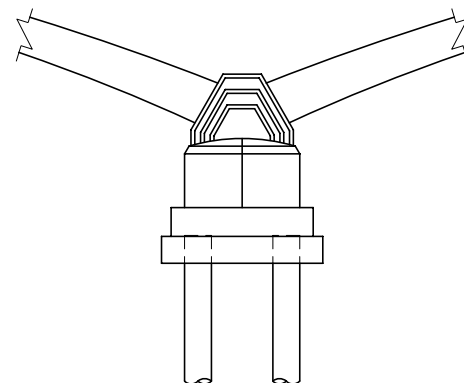
SOUNDING PLAN

GENERAL NOTES:

- Pier 5 was inspected underwater.
- At the time of inspection, on October 18, 2007, the waterline was located approximately 9.5 feet below the top of the pier shaft nose on the downstream end of Pier 5. This corresponds with a waterline elevation of 725.5 based on the design drawings.
- Soundings indicate the water depth at the time of inspection and are measured in feet.
- Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

INSPECTION NOTES:

- The channel bottom material consisted of sand and concrete rubble with up to 6 inches of probe rod penetration. There was also random pieces of scrap steel scattered around the pier on the channel bottom.
- The concrete around the pier was in good and sound condition with a light layer of aquatic growth that extended from the waterline to the channel bottom.
- Footing exposure was observed at the upstream nose of Pier 5 and extended for 3/4 of the pier length way along both sides of the pier. At the upstream nose, the full 6 feet of the vertical face of the footing was exposed (top of seal at channel bottom). The footing and seal exposure is due to localized scour, with an approximate depth of 5 to 7 feet, around the upstream end of the pier.
- A hairline vertical crack was observed that extended from the top of the pier to the channel bottom.
- A hairline vertical crack was observed that extended from the top of the pier to 1 foot above channel bottom.



TYPICAL END VIEW OF PIER

Note:

All soundings based on 2007 waterline location.

Legend

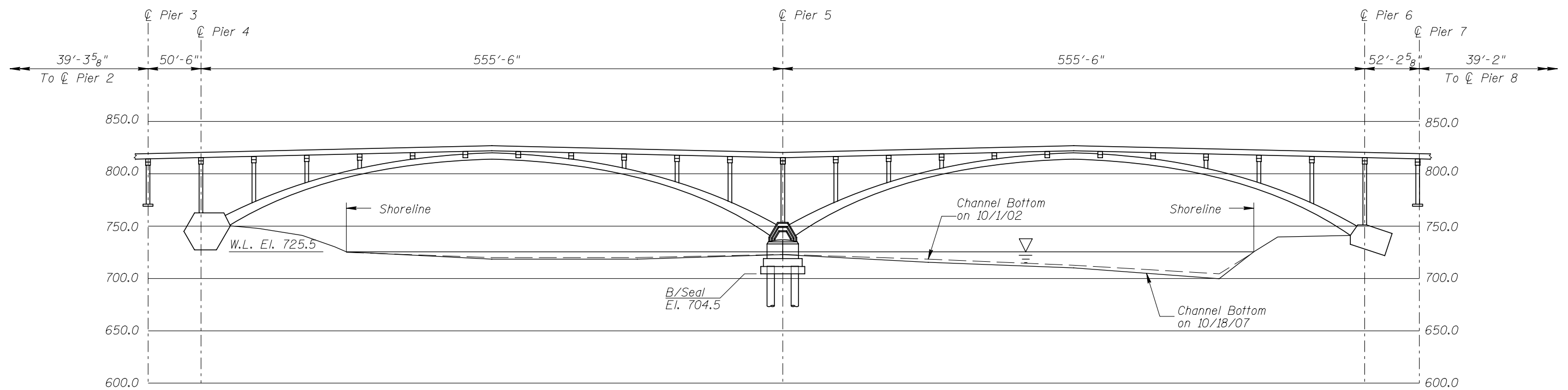
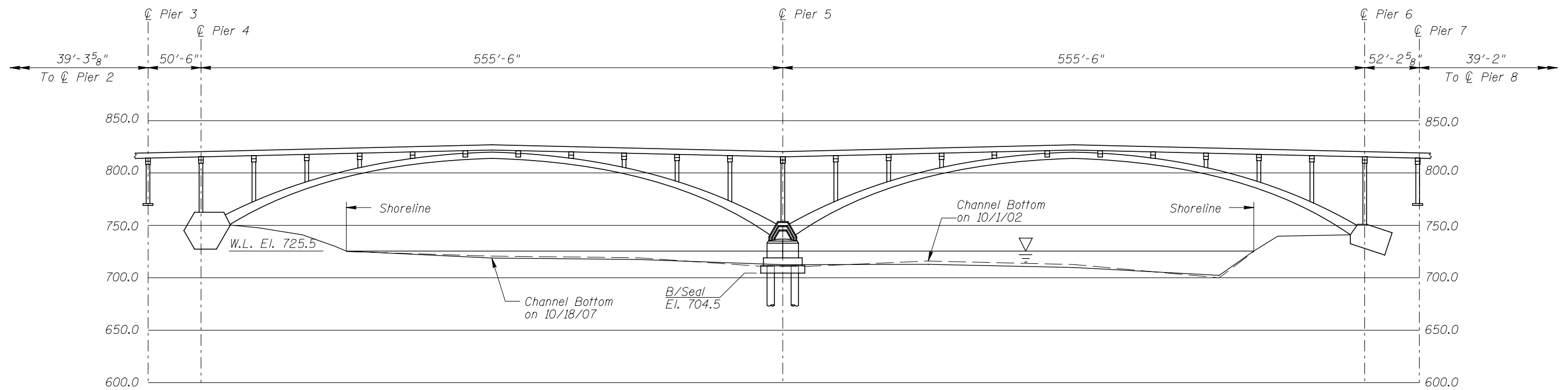
-5.9 Sounding Depth (10/18/07)
-5.2 Sounding Depth (10/1/02)

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION

STRUCTURE NO. 62082
OVER THE MISSISSIPPI RIVER
DISTRICT 5, HENNEPIN COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: LJ	COLLINS ENGINEERS 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: OCT, 2007
Checked By: VR		Scale: NTS
Code: 522162082		Figure No.: 1



Note:

Refer to Figure 1 for General Notes.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION

STRUCTURE NO. 62082
OVER THE MISSISSIPPI RIVER
DISTRICT 5, HENNEPIN COUNTY

UPSTREAM AND DOWNSTREAM FASCIA PROFILES

Drawn By: LJ

Checked By: VR

Code: 522162082

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Date: OCT. 2007

Scale: 1"=100'

Figure No.: 2

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: October 18, 2007

ON-SITE TEAM LEADER: Daniel G. Stromberg, P.E., S.E.

BRIDGE NO: 62082 WEATHER: Partly Cloudy, 60° F

WATERWAY CROSSED: Mississippi River

DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR
 OTHER

PERSONNEL: Clayton G. Brookins, Valerie Roustan

EQUIPMENT: Scuba, U/W Light, Probe Rod, Lead Line, Sounding Pole, Scraper, Camera

TIME IN WATER: 1:50 p.m.

TIME OUT OF WATER: 2:30 p.m.

WATERWAY DATA: VELOCITY 1.5 f.p.s.

VISIBILITY 2.0 feet

DEPTH 13.4 feet maximum at Pier 5

ELEMENTS INSPECTED: Pier 5

REMARKS: Overall, the concrete surfaces of Pier 5 were in good condition below water with no defects of structural significance. A 5 to 7 foot deep scour depression with footing exposure was observed at the upstream nose and along both faces of the pier. The full vertical height of the footing (to top of seal) was exposed around the upstream nose of the pier.

FURTHER ACTION NEEDED: X YES NO

Monitor the exposure of the footing and partial exposure of the seal at the upstream nose of the pier, and if found to be progressing, additional measures may then be warranted.

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 62082
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Daniel G. Stromberg, P.E., S.E.
WATERWAY CROSSED Mississippi River

INSPECTION DATE October 18, 2007

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.	UNIT DESCRIPTION	MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 5	13.4'	N	7	7	9	N	7	6	N	N	N	6	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete surfaces of Pier 5 were in good condition below water with no defects of structural significance. A 5 to 7 foot deep scour depression with footing exposure was observed at the upstream nose and along both faces of the pier. The full vertical height of the footing (to top of seal) was exposed around the upstream nose of the pier.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO. USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.